

Chapter 5: Mitigation

This chapter provides a summary of environmental commitments for the Build Alternative. These include proposed mitigating measures, commitments made to resource agencies, and required permits.

Land Use

Impacts that would impair a wilderness study area's (WSA's) suitability for preservation as wilderness will be prevented through special conditions or stipulations of the right-of-way transfer. If and when Congress designates these areas as wilderness, the right-of-way line can be included in wilderness legislation. It will be up to Congress to determine whether the wilderness area boundary will coincide with the right-of-way line.

Social Impacts

Construction schedules and practices will maintain connectivity and access through the corridor to the maximum extent possible. The road will remain open to traffic at all times unless closure is approved by the resident engineer—for example, during blasting operations. Utah Department of Transportation (UDOT) standards for traffic control management will be implemented to coordinate the efficiency and safety of construction activities throughout the duration of the project. These standards include the following:

- The contractor will work with the local communities, UDOT, and the Bureau of Land Management (BLM) to develop a schedule and communication plan that reduces impacts to the accessibility of recreational resources, grazing allotments, residences, and businesses. The plan will evaluate the best time to perform blasting operations based on the benefits and impacts.
- The construction schedule will minimize impacts during peak tourist visitation periods and school and business commutes to the maximum extent possible. Specific times for construction restriction will be established through coordination with the local community.
- Advanced notice will be given for all road closures and lane restrictions.
- Information about the construction schedule and activities will be made available at various tourist facilities, such as visitor centers and hotels.

Mitigation for right-of-way will be addressed through special conditions or stipulations for the federal land transfer from BLM. Stipulations of the right-of-way transfer would ensure the continued protection of any overlapping WSA lands for non-impairment. First, BLM would transfer the requested right-of-way to the Federal Highway Administration (FHWA). Then, FHWA would be required to manage any overlapping WSA lands within the transferred right-of-way according to the *Interim Management Policy for Lands Under Wilderness Review* (IMP) “so as not to impair the suitability of such areas for preservation as wilderness” (BLM 1995). Because the underlying land would remain federal land, FHWA would be required to insure non-impairment through stipulations of the grant for a highway easement deed to UDOT.

Pedestrian and Bicyclist Considerations

During final design, UDOT will develop a comprehensive signing plan that evaluates creative approaches to signing for shared bicycle use. Examples of such approaches used in other canyon environments include push button signs that read, “Bikes present in canyon when flashing.”

For temporary construction impacts, UDOT Standard Specification 01554 Traffic Control will be included in the contract documents and will direct the contractor to provide for the safe passage of pedestrians and bicyclists through the work zone.

Bicycle use will be discouraged during construction. To mitigate impacts to cyclists and pedestrians, information about the construction schedule will be placed in public spaces frequented by tourists and cyclists. Advance notice for construction activities that result in road closures will be provided to outfitters and local businesses.

Air Quality

Temporary impacts from fugitive dust will be mitigated through the application of UDOT Standard Specification 01355 Environmental Protection, which sets standards for fugitive dust control and visible emissions. In addition, any “non-permitted” equipment—such as a concrete batch plant, asphalt plant, or rock crushing plant—located at the construction site will require an Air Quality Approval Order (AQAO) and a fugitive dust control plan.

Noise

Noise impacts will be mitigated through the application of UDOT Standard Specification 01355 Environmental Protection, which outlines provisions for noise and vibration control and includes the following:

- Noise exceeding 95 decibels on the A-weighted decibel scale, also known as dB(A), at sensitive noise receptor sites between 7 am and 9 pm is prohibited.
- Noise exceeding 55 dB(A) at sensitive noise receptor sites on Sundays and state holidays is prohibited.
- Standards for hours of construction and methods for blocking noise from construction activities adjacent to sensitive receptors set by Standard Specification 01355 Environmental Protection will be followed.

Geology, Soils, and Topography

Detailed slope stability analyses will be conducted prior to any actions that would increase the steepness of slopes. The resulting slopes will be designed to avoid new landslide hazards. An erosion prevention plan will be prepared prior to construction. This plan will include guidelines on minimizing soil compaction, maintaining existing drainage channels, minimizing erosion during construction, and capturing any soil eroded from disturbed areas. The plan will also include information on minimizing impacts to cryptobiotic crust, including limiting the area over which vehicles and heavy equipment are allowed to operate.

Floodplains

During design, water surface elevations will be calculated and studied to ensure there is no danger to life or property resulting from bridge construction. Areas disturbed by realignment of

Calf Creek and replacement of the bridge will be re-contoured to replicate the existing creek bed and floodplain elevations. The old channel will be filled in with a final grade elevation set at the existing floodplain elevation.

Short-term impacts to flood conveyance and storage as well as water quality will be minimized by allowing the existing channel to actively function until the new bridge and channel are completed.

Water Resources and Water Quality

Mitigation for impacts resulting from the replacement of Calf Creek Bridge and the realignment of Calf Creek will be addressed through requirements of the U.S. Army Corps of Engineers (USACE) 404 permit or the Division of Water Rights Stream Alteration permit; the Division of Water Quality (DWQ) Utah Pollutant Discharge Elimination System (UPDES) permits; and the use of best management practices (BMPs). Calf Creek Bridge will be replaced with a box culvert or an open-bottomed bridge. If the box culvert option is chosen, its bottom would be placed at an elevation that would retain natural stream substrates and maintain natural conditions. The new channel will be contoured to match existing stream bed elevations and cross section elements. Final design will evaluate erosion protection measures for the new channel bed and banks. Prior to constructing the new channel, wetland topsoil will be stripped from the areas to be disturbed and will be stockpiled. The old channel will be filled in with material dredged for the new channel. The final grade elevation will be set at the wet meadow elevation. Disturbed areas in or adjacent to wet meadows will be spread with the stockpiled wetland topsoil. Other disturbed areas will be revegetated with a native seed mix. If possible, drainage design will route roadway runoff overland before discharging to the creek.

BMPs specific to bridge replacement will include the following:

- Where possible, materials and equipment will be staged away from stream banks and located in areas that minimize impacts to existing vegetation.
- Existing vegetation will be protected by preventing disturbance beyond specified construction limits.
- Creek access points will be limited to those necessary for construction.
- Fuel and other hazardous materials will be stored and handled as far away from the creek as is possible.
- Construction equipment will not be cleaned in the stream channel.
- Silt fence and fiber rolls will be installed where appropriate to keep sediment laden runoff from entering the creek.
- Demolition of the existing bridge will be done in a manner that minimizes impacts to the channel. Every effort will be made to prevent demolition debris from entering the channel.
- The contractor will submit a spill prevention, containment, and counter measure plan (SPCCP), including an inspection program for equipment operating near surface water, refueling and maintenance procedures, parking locations for equipment, and preparations for a quick response to accidental spills of petroleum or hazardous substances. Also, potential fish spawning areas will be protected.

Mitigation for increased erosion and sedimentation will be addressed through UPDES permit requirements and through the use of BMPs. An erosion control plan and stormwater pollution prevention plan (SWPPP) will be developed and incorporated into construction documents.

Disturbed areas will be revegetated with a native seed mix. BMPs for erosion will include the following:

- Existing vegetation will be protected by preventing disturbance beyond specified construction limits.
- Silt fence and fiber rolls will be installed where appropriate to keep sediment laden runoff from leaving the construction site.
- Disturbed slopes will be stabilized and revegetated in accordance with UDOT Standard Specifications 02912 Topsoil and 02922 Seed, Turf Seed, and Turf Sod.
- Runoff will be diverted away from exposed soil.
- The contractor will notify DWQ if turbidity in adjacent surface water is increased by ten nephelometric turbidity units (NTUs) or if there is any visible increase in turbidity as a direct result of the project.

Mitigation for impacts resulting from roadway widening or stabilization will be addressed through requirements of the DWQ UPDES permit and the use of BMPs. BMPs specific to roadway stabilization by blasting will include the following:

- Precautions will be taken to keep debris from entering Calf Creek.
- Heavy equipment will be staged as far away from the creek as possible.
- Debris cleared from the road will not be pushed toward the creek.
- No fill material that could leach organic chemicals (e.g., discarded asphalt) or nutrients (e.g., phosphate rock) into the receiving water will be used.

Table 5.1 provides a summary of the permits and approvals related to water resources and water quality that will be obtained prior to construction.

Wild and Scenic Rivers

Work performed to realign Calf Creek will be conducted to preserve the qualities that led to its “recreational” classification and recommendation for inclusion in the National Wild and Scenic Rivers System (NWSRS). To be classified as recreational, a river segment must offer “recreation-related opportunities [that] could include—but not be limited to—sightseeing, wildlife observation, camping, photography, hiking, fishing, hunting, and boating” (BLM 1993). Therefore, realignment plans and activities will be designed to re-create the existing natural character, wildlife habitat, and hiking/fishing access afforded by the existing segment. BLM, U.S. Fish and Wildlife Services (USFWS), and USACE will be coordinated with during design to develop criteria for re-creating this recreational resource.

To re-establish the existing, undeveloped character of the river bank, the “recreation characteristics” that support this river segment’s suitability determination will be re-established as quickly as possible. This re-establishment will be done by revegetating the disturbed area with native species and by restricting access to the area through signage for the two to three year revegetation period.

Wetlands/Waters of the U.S.

Conceptually, mitigation for impacts to dry washes includes the placement of loose riprap at culvert inlets and outlets to dissipate energy and prevent erosion. A Section 404 permit will be

obtained prior to discharging dredged or fill materials into jurisdictional waters, including ephemeral dry washes. It is anticipated that a Nationwide 404 permit will be required for impacts to dry washes. The project will comply with mitigation requirements and other conditions outlined in the Section 404 permit.

Mitigation for impacts and realignment of Calf Creek will be addressed through requirements of USACE 404 and DWQ UPDES permits and the use of BMPs. Prior to constructing the new channel, wetland topsoil will be stripped from the areas to be disturbed and will be stockpiled. The old channel will be filled in with a final grade elevation matching the wet meadow. Disturbed areas in or adjacent to wet meadows will be spread with the stockpiled wetland topsoil. The microorganisms and seeds in this topsoil will promote wetland vegetation.

Wetland mitigation is expected to consist of enhancing the stream bank and wetlands that are temporarily impacted by construction. Tamarisk and Russian olive trees will be removed, and disturbed areas will be replanted with native cottonwood trees and willows, increasing wildlife habitat value. A Section 404 permit will be obtained prior to discharging dredged or fill materials into jurisdictional waters, including wetlands. USACE will determine whether an individual or Nationwide 404 permit will be required. The project will comply with mitigation requirements and other conditions outlined in the Section 404 permit.

BMPs will be implemented during roadway construction to assure that creeks, washes, wetlands, and vernal pools are protected from disturbed areas' sediment laden runoff. Environmental and silt fencing will be placed to protect vegetation and prevent disturbance beyond specified limits of construction.

Disturbed areas would be recontoured to match the pre-disturbed condition and revegetated. UDOT Standard Specifications 02912 Topsoil and 02922 Seed, Turf Seed, and Turf Sod will be included in the construction contract documents.

Wildlife and Threatened and Endangered Species

Mitigation for this project includes efforts to minimize impacts to threatened, endangered, and candidate species as well as wildlife in general. Specific mitigation measures include the following:

- The peregrine nest in Calf Creek Canyon will be monitored by the BLM biologist prior to construction to determine if the nest becomes actively used again.
- Stream diversion or channel relocation of Calf Creek will not be completed during fish migration and spawning season—March 15th through April 30th. Construction of the Calf Creek Bridge during late summer and early fall would be the least disruptive on local wildlife of the riparian zone.
- Calf Creek Bridge will be replaced with a box culvert or with an open-bottomed bridge. If the box culvert option is chosen, its bottom would be placed at an elevation that would retain natural stream substrates and would maintain natural conditions. The structure will be designed to prevent the formation of a fish barrier through the erosion process.
- Efforts will be made to avoid riparian tree removal during design and construction of the Calf Creek Bridge.
- Silt fencing, which will define the construction area and prevent incidental impacts to the riparian zone, will be installed prior to the construction of the Calf Creek Bridge.

- Stream bed elevations for the Calf Creek realignment will match preconstruction conditions and no rise of the floodplain will be permitted.
- Native willow and cottonwood saplings from a local source will be planted on the Calf Creek stream bank to revegetate and stabilize the bank. In this manner, all disturbed areas will be recontoured to match the pre-disturbed condition and revegetated. Also, appropriate BMPs will be implemented to stabilize soils and prevent excessive erosion of impacted areas while revegetation efforts take hold.
- Compensatory mitigation for impacts to the Calf Creek area will be defined in the Section 404 permit for the bridge replacement by the USACE.
- All contractors will be provided with environmental permit special conditions. The project engineer will complete monitoring for compliance with permit special conditions. Contractors will be required to report any special condition violations to the project engineer.

Invasive Species

UDOT Special Provision 02924S Invasive Weed Control specifies the BMPs to be used to control the spread of noxious weeds. BMPs include cleaning all earth-moving equipment prior to entering the project as well as locating and treating existing noxious weeds with herbicide. UDOT contract documents will specify that seed mixes used for landscaping and erosion control must be free of noxious weeds and other invasive plant species. Seed mixes will be approved by BLM's monument botanist.

Coordination with the Grand Staircase-Escalante National Monument botanist is required prior to ground disturbance at "The Tank," located near mile post (MP) 71. Prior to construction at this location, the Johnson grass will be sprayed. Herbicides will be applied carefully to avoid impacts to water quality. Herbicides used near water and wet areas for Johnson grass must have an "aquatic label."

Cultural Resources

A memorandum of agreement (MOA) was prepared to outline the mitigation measures for the site adversely affected, Site 42Ga5647. Under the *Scenic Byway 12 Signage and Interpretive Master Plan*, BLM would impact Site 42Ga5647 by constructing the Hogsback Day Use Recreation Area adjacent to SR-12. The MOA between FHWA, BLM, and SHPO was developed to establish an efficient and effective means of resolving the adverse effects that would be caused by both projects. UDOT is participating as an invited signatory in the MOA, and the Paiute Indian Tribe of Utah is participating as a concurring party. FHWA consulted with the Hopi Tribe, the Kanosh Band of the Paiute Indians, the Shivwits Band of Paiute Indians, and the Kaibab Band of Paiute Indians; none of these parties chose to participate in the MOA. FHWA also notified ACHP of its adverse effect determination, and ACHP declined to participate. However, the Hopi Tribe specifically requested to review the draft treatment plan for Site 42Ga5647. A copy of the MOA is available in Appendix A.

The MOA specifically stipulates mitigation measures for the potential adverse effects to Site 42Ga5647. Mitigation will include one or more of the following measures to be jointly implemented by FHWA and BLM:

- Development of an interpretive exhibit at the day use recreation facility that presents elements of human prehistory germane to the area.

- Construction of an elevated boardwalk trail to minimize damage to the site from pedestrian traffic.
- Excavation of part or all of the site.

The determination of which measure will be implemented and how it will be implemented will be made before constructing improvements to SR-12 or the Hogsback Day Use Recreation Area.

For historic properties where construction activities will take place within 50 feet of the site—potentially Sites 42Ga6077, 42Ga6078, 42Ga6079, 42Ga6080, 42Ga6081, 42Ga6086, 42Ga6087, and 42Ga6088—temporary environmental fencing will be constructed to aid in the avoidance of the site.

For historic and archeological resources that could be potentially unearthed during construction, the UDOT Standard Specification 01355 Environmental Protection (Part 1.13—Discovery of Historical, Archaeological, or Paleontological Objects, Features, Sites, Human Remains, or Migratory Avian Species) applies. The specification states that the following must be done:

- If a suspected historic, archaeological, or paleontological item, feature, or site is encountered or if suspected human remains are encountered, the construction contractor must immediately suspend construction operations in the vicinity—a 100-foot buffer around the perimeter—of the discovery.
- The construction contractor must notify the on-site engineer verbally of the nature and exact location of the findings.
- The engineer must contact the region staff archaeologist who will assess the nature of the discovery and determine the necessary course of action.
- The construction contractor must protect the discovered objects or features and provide written confirmation of the discovery to the engineer within two calendar days.
- The engineer must keep the contractor informed regarding the status of the restriction.

In the event that historic and archeological resources are encountered on lands within the monument, the BLM monument archaeologist will also be notified. Buried human remains that were not identified during the cultural resource investigation could inadvertently be unearthed during construction activities. If human remains of Native American origin are discovered during ground disturbing activities, it is necessary to comply with 43 Code of Federal Regulations (CFR) 10—the Native American Graves Protection and Repatriation Act of 1990—or Utah Administrative Code (UAC) 9-9-401 to 403—Utah Native American Graves Protection and Repatriation Act of 1992—depending on land ownership.

Paleontological Resources

Prior to construction activities in or near areas where Navajo and Kayenta formations are exposed, a qualified paleontologist will survey the construction area. During construction, a qualified paleontologist will conduct periodic monitoring of the improvement area. In the event that paleontological resources are encountered prior to or during construction, the discovery procedures specified in UDOT Standard Specification 01355 Environmental Protection (Part 1.13—Discovery of Historical, Archaeological, or Paleontological Objects, Features, Sites, Human Remains, or Migratory Avian Species) and Section G of the memorandum of understanding (MOU) between UDOT and Utah Geological Survey (UGS) pursuant to UAC 63-73-19 will be

followed. In the event that paleontological resources are encountered on lands within the monument, the BLM monument paleontologist will also be notified.

For paleontological localities that could be potentially unearthed during construction, the UDOT Standard Specification Section 01355 Environmental Protection (Part 1.13) applies. The specification states that the following must be done:

- If a suspected historic, archaeological, or paleontological item, feature, or site is encountered or if suspected human remains are encountered, the construction contractor must immediately suspend construction operations in the vicinity—a 100-foot buffer around the perimeter—of the discovery.
- The construction contractor must notify the on-site engineer verbally of the nature and exact location of the findings.
- The engineer must contact the region staff archaeologist who will assess the nature of the discovery and determine the necessary course of action.
- The construction contractor must protect the discovered objects and provide written confirmation of the discovery to the engineer within two calendar days.
- The engineer must keep the contractor informed regarding the status of the restriction.

Hazardous Waste

The potential for introducing hazardous waste through leaks or spills during construction, such as fuel spills from construction equipment, will be minimized by implementing good materials handling practices. BMPs will be used to prevent accidental release of hazardous materials during construction. Any accidental spills will be completely cleaned up according to state and federal requirements.

If previously unidentified sites are encountered during construction, all work in the area will stop immediately. UDOT will consult with the Division of Environmental Response and Remediation (DERR) to determine the appropriate remediation measures.

Visual Quality

UDOT is incorporating the context sensitive solutions (CSS) philosophy into the SR-12, Escalante to Boulder, project and is striving to find a solution that protects and enhances the environmental setting, has a minimal impact on natural resources, and is aesthetically appropriate. Mitigation measures for impacts to visual resources include the following:

- In areas where existing barriers need to be stabilized and on the Calf Creek Bridge, aesthetic barriers will be used instead of concrete Jersey barriers. If it is determined during design to be safe, 18-inch high barriers will be used instead of 36-inch high barriers to improve views from the road.
- Efforts will be made to match form, line, color, and texture. If possible, source material matching the surrounding area will be used.
- Short-term scarring impacts from blasting will be minimized by softening or removing evidence of blast holes, excavator scrape marks, and loose material.
- Products that speed the progress of desert varnish will be used on freshly exposed rock to blend in with nearby rock faces.

- Slope rounding will be included in final grading to blend new soil cuts into the existing grade.
- Existing vegetation will be protected by preventing disturbance beyond specified construction limits.
- Disturbed slopes will be stabilized and revegetated with a native seed mix.

Required Permits and Approvals

Table 5.1 summarizes additional permits and approvals required.

Table 5. 1: Required Permits and Agreements

Agency	Permit/Approval Required	Status
Division of Air Quality (DAQ)	AQAO	If any "non-permitted" equipment—such as a concrete batch plant, asphalt plant, and/or rock crushing plant—are located at the construction site, an AQAO will be required from the executive secretary of the Air Quality Board, DAQ.
USACE	Section 404 Permit	USACE has concurred with wetland delineation and identification of waters of the U.S.; the correspondence can be found in Appendix A. A Section 404 Permit will be required for improvements at Hole-in-the-Rock Road intersection and replacement of Calf Creek Bridge. Because the permanent impact to jurisdictional waters is less than 0.5 acres, a Nationwide 404 permit may be possible for this project. Requires coordination during design phase with USACE and Utah Division of Water Rights to determine appropriate permit for Calf Creek Bridge replacement and realignment of Calf Creek.
Division of Water Rights	Stream Alteration Permit	Requires coordination during design phase with USACE and the Division of Water Rights to determine appropriate permit for Calf Creek Bridge replacement and realignment of Calf Creek.
DWQ	Section 402 UPDES Stormwater General Permit for Construction Activities	Development of a SWPPP and temporary erosion control plan required during design phase. Filing of notice of intent (NOI) required prior to construction. Filing of notice of termination (NOT) is required when construction is completed.
DWQ	Section 402 UPDES General Permit for Construction Dewatering	May be required (if there are any dewatering activities during construction).
SHPO	MOA	Coordination with SHPO is required during design. MOA must be executed prior to construction.